

Claims:

1. An apparatus, comprising:

a wireless station operable in a wireless network using an adaptive bitloading (ABL) technique, wherein said wireless station is capable of using a predetermined limited set of modulation patterns to perform said ABL.

2. The apparatus of claim 1, wherein said predetermined limited set of modulation patterns is limited by some number, which is based on channel smoothness property.

3. The apparatus of claim 1, wherein said number of allowed patterns is limited to some set of N_{BL} patterns which is less than $N_{mod}^{N_{sc}}$ patterns with N_{sc} being is the number of subcarriers in an OFDM symbol.

4. The apparatus of claim 3, wherein said N_{BL} patterns are stored a-priori.

5. The apparatus of claim 1, further comprising at least one additional wireless station that is capable of receiving packets from said wireless station and upon packet reception of said packets by said at least one additional wireless station, said at least one additional wireless station

determines which of said N_{BL} patterns is best for current channel conditions and sends back to said wireless station an index of a pattern instead of said pattern itself.

6. The apparatus of claim 5, wherein said wireless station uses said pattern index to obtain said bitloading pattern, modulate data with said pattern, and send data to said at least one additional wireless station advanced by said bitloading pattern index.

7. The apparatus of claim 6, wherein said wireless station is capable of developing fast methods for searching a closest bitloading pattern in a given pattern set by specific indexing of said pattern set.

8. A method, comprising:
using a predetermined limited set of modulation patterns to perform adaptive bit loading (ABL) to compress said modulation patterns in wireless communications.

9. The method of claim 8, further comprising limiting by some number said predetermined limited set of modulation patterns based on channel smoothness property.

10. The method of claim 8, further comprising limiting said number

of allowed patterns to some set of N_{BL} patterns which is less than $N_{mod}^{N_{sc}}$ patterns with N_{sc} being is the number of subcarriers in an OFDM symbol.

11. The method of claim 10, further comprising storing said N_{BL} patterns a-priori.

12. The method of claim 8, further comprising receiving packets from said wireless station by at least one additional wireless station and upon packet reception of said packets by said at least one additional wireless station, said at least one additional wireless station determines which of said N_{BL} patterns is best for current channel conditions and sends back to said wireless station an index of a pattern instead of said pattern itself.

13. The method of claim 12, further comprising using said pattern index by said wireless station to obtain said bitloading pattern and modulating data with said pattern and sending data to said at least one additional wireless station advanced by said bitloading pattern index.

14. The method of claim 13, further comprising developing fast methods for searching a closest bitloading pattern in a given pattern set by specific indexing of said pattern set by said wireless station.

15. A machine-accessible medium that provides instructions, which when accessed, cause a machine to perform operations comprising:

using a predetermined limited set of modulation patterns to perform adaptive bit loading (ABL) to compress said modulation patterns in wireless communications.

16. The machine-accessible medium of claim 15, further comprising said instructions causing said machine to perform operations further comprising limiting by some number said predetermined limited set of modulation patterns based on channel smoothness property.

17. The machine-accessible medium of claim 15, further comprising said instructions causing said machine to perform operations further comprising 8, further comprising limiting said number of allowed patterns to some set of N_{BL} patterns which is less than $N_{mod}^{N_{sc}}$ patterns with N_{sc} being is the number of subcarriers in an OFDM symbol.

18. The machine-accessible medium of claim 17, further comprising said instructions causing said machine to perform operations further comprising storing said N_{BL} patterns a-priori.

19. The machine-accessible medium of claim 15, further comprising said instructions causing said machine to perform operations

further comprising receiving packets from said wireless station by at least one additional wireless station and upon packet reception of said packets by said at least one additional wireless station, said at least one additional wireless station determines which of said N_{BL} patterns is best for current channel conditions and sends back to said wireless station an index of a pattern instead of said pattern itself.

20. The machine-accessible medium of claim 19, further comprising said instructions causing said machine to perform operations further comprising using said pattern index by said wireless station to obtain said bitloading pattern and modulating data with said pattern and sending data to said at least one additional wireless station advanced by said bitloading pattern index.

21. The machine-accessible medium of claim 20, further comprising said instructions causing said machine to perform operations further comprising developing fast methods for searching a closest bitloading pattern in a given pattern set by specific indexing of said pattern set by said wireless station.

22. A system, comprising:

a first wireless station; and

a second wireless station in communication with said first

wireless station using an adaptive bitloading (ABL) technique, wherein said first and said second wireless stations are capable of using a predetermined limited set of modulation patterns to perform said ABL.

23. The system of claim 22, wherein said predetermined limited set of modulation patterns is limited by some number, which is based on channel smoothness property.

24. The system of claim 22, wherein said number of allowed patterns is limited to some set of N_{BL} patterns which is less than $N_{mod}^{N_{sc}}$ patterns with N_{sc} being is the number of subcarriers in an OFDM symbol.

25. The system of claim 24, wherein said N_{BL} patterns are stored a-priori.

26. The system of claim 22, wherein said second wireless station is capable of receiving packets from said first wireless station and upon packet reception of said packets by said second wireless station, said second wireless station determines which of said N_{BL} patterns is best for current channel conditions and sends back to said first wireless station an index of a pattern instead of said pattern itself.

27. The system of claim 26, wherein said first wireless station uses

said pattern index to obtain said bitloading pattern, modulate data with said pattern, and send data to said second wireless station advanced by said bitloading pattern index.

28. The system of claim 27, wherein said first wireless station is capable of developing fast methods for searching a closest bitloading pattern in a given pattern set by specific indexing of said pattern set.